

DOCUMENT RESUME

ED 363 301

IR 016 420

AUTHOR Hanson, LuEtt
TITLE Perceptions of Between-Channel Redundancy in Television Messages.
PUB DATE 93
NOTE 11p.; In: Art, Science & Visual Literacy: Selected Readings from the Annual Conference of the International Visual Literacy Association (24th, Pittsburgh, PA, September 30-October 4, 1992); see IR 016 399.
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)
EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS Administrators; *Audience Response; *Auditory Perception; Comparative Analysis; Comprehension; Congruence (Psychology); Higher Education; Rating Scales; Researchers; Research Needs; Student Attitudes; *Television; Undergraduate Students; *Videotape Recordings; *Visual Perception
IDENTIFIERS *Message Perception; *Redundancy Analysis

ABSTRACT

Television has the ability to present information in two sensory channels simultaneously. Well-constructed dual-channel messages have great power to facilitate remembering and understanding, but poorly constructed ones have the power to confuse. Researchers' descriptions of audio/video combinations were compared with those of audience members and television producers to discover common grounds of understanding among those groups. The stimulus was a videotape of 15 short (5 to 20 seconds) programs with various compositions of audio/visual redundancy. After a pilot study, 109 undergraduate students and 21 professional television production personnel viewed the videotape and rated each program on 4 semantic differential scales. Audience and producer perceptions of the relationships between the audio and video channels were congruent with those of the researchers for all but two programs. The more complex and ambiguous the relationships were, the more varied the interpretations became. Future studies should measure more complicated messages. Two tables describe the programs presented and the frequencies of audience responses. (Contains 14 references.) (SLD)

* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *

Perceptions of Between-Channel Redundancy in Television Messages

by
LuEtt Hanson

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

☐ This document has been reproduced as
received from the person or organization
originating it.
☐ Minor changes have been made to improve
reproduction quality.

• Points of view or opinions stated in this docu-
ment do not necessarily represent official
OERI position or policy.

One of television's most salient characteristics is its ability to present information in two sensory channels simultaneously. Well-constructed dual-channel messages have great power to facilitate remembering and understanding, but poorly-constructed ones have great potential to confuse (Hartman, 1961b; Levie & Dickie, 1973).

Researchers concerned with discovering principles for sound informational television program design often ask: what is the best way to construct dual-channel messages to enhance learning? Their answers often involve the concept of between-channel redundancy--the presentation of messages with the same meaning in both channels simultaneously.

While most researchers agree on that general definition of redundancy, they differ on the number and nature of its varying degrees. Hartman (1961b) proposed four categories: redundant, related, unrelated and contradictory combinations of audio and video. Severin (1967) agreed with Hartman's first two categories, but split the third into "unrelated, same category" and "unrelated, different category." Conway (1968) criticized both proposals for making unnecessarily fine distinctions between categories of symbols that are actually "referentially equivalent."

In spite of this debate, however, some redundancy studies have continued to classify television messages simply as either redundant or not redundant. Examples of such studies include those by Pezdek and Stevens (1984), Reese (1984), and Drew and Grimes (1987). In a later study, Grimes (1989) proposed another category between the two extremes but failed to describe this category completely or consistently.

The lack of consensus on how to describe the relationship between the two channels of television messages is probably not limited to redundancy researchers. Eco (1982) and Graber (1989) have pointed out that interpretation of the meaning of a television program often differs from group to group among researchers, producers and audience members.

In order for researchers to accurately measure the effects of between-channel redundancy, and for TV producers to accurately provide the proper degree of redundancy in their programs, they must first be sure they understand how all three groups--researchers, producers and audience members--perceive redundancy. Many theorists of meaning and perception agree that a message's meaning depends on the receiver's interpretation (Littlejohn, 1978). Therefore, it is appropriate to have audience members

"PERMISSION TO REPRODUCE THIS MATERIAL
IN OTHER THAN PAPER COPY HAS BEEN
GRANTED BY

Alice D. Walker
TO THE EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC)"

and program producers evaluate the audio/video combinations described by redundancy researchers to see whether the three groups interpret between-channel relationships in the same way.

Audio/Video Combinations Described in the Literature

As noted above, many researchers have proposed differing categories of between-channel redundancy. Some of the researchers have merely described their categories in writing while others have created examples of television messages that fit their categories; few have actually tested their embodiments of varying degrees of redundancy against the perceptions of others.

Hartman (1961b), in his review of multi-channel research, proposed a model with four categories of redundancy:

"(a) Two channels may present *redundant* information such as the same word, printed and spoken. (b) Two channels may present *related* information such as a pictorial representation of an object and verbal description of the object. (c) Channel information--such as a picture of a tree in the pictorial channel and the word *nine* in the audio--may be *unrelated*. (d) The information presented may be *contradictory* as in the simultaneous presentation of the printed word, *woman*, and the spoken word, *man*" (p. 242).

There is no indication that Hartman ever realized these specific audio/video combinations on film or videotape. However, he did describe his creation and use of another similar film (Hartman, 1961a). This film presented people's faces with superimposed names and the sound of an announcer reading each name twice. The pictures, printed words and spoken words appeared in various combinations that seem to embody

Hartman's redundant and related categories as well as a combination of the two, but he called the audio/video relationship by a different name--simultaneous information. Although Hartman (1961b) urged researchers to determine the relationship of information in the multiple channels of experimental stimuli operationally rather than subjectively, there is no indication he did this with his own categories.

Severin (1967) reported creating and using several combinations of audio and visual messages in a slide-tape format. The descriptions of his test conditions of "audio and print messages combined" and "audio with related pictures" match Hartman's redundant and related conditions respectively. However, Severin set up two kinds of unrelated categories:

"Audio . . . with unrelated pictures of the same category (e.g., the word 'moose' with a picture of a bison) . . .

"The audio . . . with unrelated pictures of a different category (e.g., the word 'moose' with a picture of a catfish). . ." (p. 387).

The relationship between the sound and pictures in the second combination--unrelated, different category--is similar to the one Hartman described as unrelated, but the relationship in the first combination--unrelated, same category--seems to fall between those in Hartman's related and unrelated categories. Severin's categorization of multi-channel messages, like Hartman's, appears to have been done subjectively rather than operationally.

Warshaw (1978) studied attention to and learning from the dual-channel messages of television advertising. Although he was more interested in the amount of information in each channel than the nature of their relatedness, he did define one category of redundancy:

"The showing of similar but not identical material on two or more stimulus channels is herein defined as *incomplete redundancy* (e.g., word *animal* spoken while picture of a dog is shown on screen)" (p. 367).

This audio/video relationship is like Severin's unrelated, same category relationship. The pictures and sound are neither so close in meaning as those in Hartman's related category nor so different in meaning as the pictures and sound in his unrelated category. However, one of Warshaw's terms (animal) is inclusive of the other (dog), which is not the case with Severin's unrelated, same category terms (bison, moose). Since redundancy was not the focus of Warshaw's study, it is not surprising that he neither created this condition on tape nor obtained an objective assessment of the relationship of its elements.

Conway (1968) criticized both Hartman and Severin for confusing sense mode (seeing, hearing) with sign type (iconic, digital) in defining categories of redundancy. He said their distinctions between redundant and related messages ignored the possibility that many different forms of information can be "referentially equivalent" to an audience member. His example was the concept "cow," which he said could be evoked equally well by the iconic sound "moo," the spoken digital word "cow," an iconic line drawing of a cow, or the printed digital word "cow." According to Conway, any audio/video combination of those elements is equally similar in meaning. Conway mentioned creating and using different combinations of audio and video messages for experiments, but did not say whether his cow example was included. However, he reported pretesting to discover the referential equivalence of the different messages used in the presentations.

The preceding studies examined combinations of audio and video that are far simpler than those usually found in television programs. Some more recent studies have used actual TV programs or program-style material.

In their study of children's memory for auditory and visual information on television, Pezdek and Stevens (1984) used segments of *Sesame Street*:

"The audio and video tracks from four different television segments were . . . combined to produce conditions in which (a) the audio and video tracks were from the same segment (A/V match), (b) the audio and video tracks were not from the same segment (A/V mismatch) . . .

"It is important to note that all of the A/V mismatch segments were arrived at by recombining audio and video portions of segments that involved the same characters. Although the voices and mouth movement were not synchronized, the voices and visible characters were the same" (p. 214).

Although Pezdek and Stevens did not use the term redundancy, their concerns about how people learn from multi-channel presentations when the audio and video have different relationships of meaning are similar to the concerns of redundancy researchers. Their use of opposite terms (match, mismatch) for the relationships between the video and audio in their programs suggests that their categories are similar to Hartman's redundant and contradictory categories, even though Hartman's descriptions of the audio/video relationships in those categories differed from the descriptions given by Pezdek and Stevens. Pezdek and Stevens did not report any evaluation of the programs for matching or mismatching meaning; apparently they assumed that professionally created television programs have matching audio and video and

that putting audio from one segment with video from another creates a mismatch.

Reese (1984) used television news programs as the vehicle for studying the effects of redundancy on learning. He defined redundancy as "shared information, such that there are facilitative and not contradictory relationships between words and pictures" (p. 80). His programs consisted of news stories with either redundant or nonredundant pictures and words. Reese described at length his validity test in which judges rated the relationship of the audio and video in the programs on a scale of +10 for redundant or reinforcing meaning to -10 for nonredundant or contradictory meaning. Reese's use of opposite terms (redundant, nonredundant) and his use of the terms nonredundant and contradictory interchangeably imply that his categories are similar to Hartman's redundant and contradictory categories.

Like Reese, Drew and Grimes (1987) used television news content to study the effects of varying conditions of redundancy on learning. The construction of their programs and their use of the terms redundant and nonredundant are similar to Reese's. However, Drew and Grimes did not report any objective testing of the nature of the audio/video relationships in their programs.

In an effort to clarify the findings of earlier studies (Reese, 1984; Drew & Grimes, 1987), Grimes (1989) added a category to previous either/or classifications of material as redundant or nonredundant. He described this condition as one "that exhibits overall *between-channel* redundancy and *between-message* conflict" (p. 2), and provided further explanation of the condition:

"This is one in which the two information channels are thematically

related, but one in which individual audio and video messages conflict. For example, such a condition might be one in which the narration refers to a collapsed house among a row of houses. But the accompanying video does not show *the* collapsed house. So when a reference is made to the collapsed row house, the video conflicts by showing a row of houses that are not collapsed" (pp. 2-3).

Although other examples in his paper muddy the issue, Grimes was obviously working toward establishing a category in which the audio/video meanings are neither so close as in Hartman's redundant and related categories nor so distant as in Hartman's unrelated and contradictory categories. Grimes' category is therefore similar to Severin's (1967) unrelated, same category relationship and Warshaw's (1978) incomplete redundancy relationship.

Grimes called the condition with the highest degree of redundancy "match/specific," the condition with partial redundancy "match/general," and the condition with extreme channel conflict "mismatch." He reported creating and using programs demonstrating these conditions. He also reported that TV news professionals evaluated the programs "to determine whether each of the stories was suitable for airing" (p. 11), but it is not clear how much that evaluation depended on an assessment of redundant meaning in the audio and video channels.

After more than thirty years of research, classification of audio/video redundancy relationships is still idiosyncratic. There is little consistency among the redundancy relationships described in the literature. Some researchers have appeared to draw overly fine distinctions between audio/video relationships while others have used too few categories for meaningful classification. There is little

agreement about the boundaries or even the names of those categories.

Although television messages may be so complex as to defy precise classification, a common language of redundancy would be helpful for communicating research results and production guidelines clearly. Such a language should take into account audience's and producers' interpretations of audio/video relationships as well as those of researchers. This study compares researchers' descriptions of audio/video combinations with audience members' and producers' interpretations of those combinations in order to discover common grounds of understanding among those groups.

Methods

The stimulus in this study was a videotape consisting of 15 short (5-20 seconds) programs displaying various conditions of redundancy as described in the literature. Some of the programs were realizations of dual-channel presentations merely proposed in the literature, and the rest were recreations of programs actually used in previous studies. A complete description of the programs appears in Table 1. The programs were arranged in random order on the tape to reduce the possibility that subject responses would be affected by perceived patterns among the programs.

A pilot study was conducted in late April, 1991, with 47 undergraduate students in an Introduction to Mass Communication class. The students rated each program on a Likert scale on which 1 represented audio and video messages with the same meaning and 5 represented audio and video messages with opposite meanings. The mean ratings for programs presenting Hartman's and Severin's redundant and related categories and Hartman's simultaneous information

category were 1.40, 1.32 and 1.77 respectively. Programs presenting Hartman's unrelated and contradictory categories were rated 4.66 and 4.83. Programs presenting Severin's unrelated, same category and unrelated, different category conditions were rated 3.74 and 4.45, while the program presenting Warshaw's incomplete redundancy condition was rated 1.87. These results suggest there are varying redundancy relationships and that viewers can distinguish among them.

In the present study, 109 undergraduate students in an Introduction to Mass Communication class and 21 professional TV production personnel viewed the videotape and rated each program on four semantic differential scales. Hartman (1961b) proposed the semantic differential technique as a way of defining the relationship between simultaneously presented audio and video information. The polar opposites on each scale in this study were chosen from among the terms researchers used to describe dual-channel relationships. The polar opposites were: same/ opposite, match/mismatch, related/unrelated, and reinforcing/contradictory. Each scale was divided into seven positions, scored from +3 to -3. The instructions and subject response forms were adapted from models in Osgood, Suci, and Tannenbaum (1957).

Results and Discussion

Audience perceptions of the relationships between the audio and video channels in the stimulus programs were congruent with the researchers' perceptions on all but two programs. Table 2 shows the frequency of responses to each program on relevant scales and comparisons to expected frequencies. Relevant scales are those which use the researchers' exact relationship labels or the labels most similar to those used by

Table 1
Description of Programs

Program 1

Video: printed word "chair"

Audio: spoken word "chair"

Illustrates: Hartman's redundant condition, Severin's redundant condition, Conway's referentially equivalent digital video with digital audio

Program 2

Video: video shot of a cup

Audio: spoken word "cup"

Illustrates: Hartman's related condition, Severin's related condition, Conway's referentially equivalent iconic video with digital audio

Program 3

Video: still picture of a tree

Audio: spoken word "nine"

Illustrates: Hartman's unrelated condition

Program 4

Video: printed word "woman"

Audio: spoken word "man"

Illustrates: Hartman's contradictory condition

Program 5

Video: still picture of a bison

Audio: spoken word "moose"

Illustrates: Severin's unrelated, same category condition

Program 6

Video: still picture of an angelfish

Audio: spoken word "moose"

Illustrates: Severin's unrelated, different category condition

Program 7

Video: still picture of a dog

Audio: spoken word "animal"

Illustrates: Warshaw's incomplete redundancy condition

Program 8

Video: line drawing of a cow

Audio: sound effect "moo"

Illustrates: Conway's referentially equivalent iconic video with iconic audio

Program 9

Video: printed word "cow"

Audio: sound effect "moo"

Illustrates: Conway's referentially equivalent digital video with iconic audio

Program 10

Video: person's face with superimposed first and last name

Audio: superimposed name spoken twice

Illustrates: Hartman's simultaneous information condition

Program 11

Video: scene from *The Mary Tyler Moore Show* with Lou and Mary

Audio: audio track from the same scene

Illustrates: Pezdek and Stevens' A/V match condition

Program 12

Video: another scene from *The Mary Tyler Moore Show* with Lou and Mary

Audio: audio track from a third scene with Lou and Mary

Illustrates: Pezdek and Stevens' A/V mismatch condition

Program 13

Video: news videotape showing a dead dolphin on a beach

Audio: announcer saying, "The carcasses of dolphins are washing up on the beaches of Spain this summer."

Illustrates: Reese's redundant condition, Drew and Grimes' redundant condition, Grimes' match/specific condition

Program 14

Video: news videotape showing confiscated illegal drugs

Audio: announcer saying, "International delegates discussed the causes of child abuse and neglect at a conference in West Germany."

Illustrates: Reese's nonredundant condition, Drew and Grimes' nonredundant condition, Grimes' mismatch condition

Program 15

Video: news videotape showing a row of cars in good condition in a shopping plaza parking lot

Audio: announcer saying, "Vandals did five hundred dollars' damage to a car parked at the shopping plaza."

Illustrates: Grimes' thematically related, match-general condition

Table 2

Frequency of Audience Responses

Program	Scale	<u>Audio/Video Relationship</u>			χ^2
		Redundant	Neutral	Nonredundant	
1	same/opposite	102	6	1	.45
	match/mismatch	103	4	2	.33
	related/unrelated	104	3	2	.23
	reinforcing/contradictory	101	7	1	.58
2	same/opposite	108	1	0	.01
	match/mismatch	108	0	1	.01
	related/unrelated	107	2	0	.04
	reinforcing/contradictory	106	2	1	.08
3	related/unrelated	5	0	104	.23
4	reinforcing/contradictory	4	10	95	1.80
5	related/unrelated	37	7	65	17.76*
6	related/unrelated	7	2	100	.74
7	same/opposite	92	15	2	2.65
	match/mismatch	99	7	3	.92
	related/unrelated	105	2	2	.15
	reinforcing/contradictory	106	2	1	.08
8	same/opposite	108	1	0	.01
	match/mismatch	109	0	0	0
	related/unrelated	109	0	0	0
	reinforcing/contradictory	109	0	0	0
9	same/opposite	105	4	0	.15
	match/mismatch	108	1	0	.01
	related/unrelated	109	0	0	0
	reinforcing/contradictory	108	1	0	.01
10	same/opposite	96	6	7	1.55
	match/mismatch	96	5	8	1.55
	related/unrelated	99	6	4	.92
	reinforcing/contradictory	95	8	6	1.80
11	match/mismatch	97	6	5	1.32
12	match/mismatch	6	3	100	.74
13	same/opposite	103	5	1	.33
	match/mismatch	105	2	2	.15
	related/unrelated	105	2	2	.15
	reinforcing/contradictory	102	4	3	.45
14	match/mismatch	5	0	104	.23
15	match/mismatch	75	16	18	10.60*

* $p < .01$

the researchers. Producers' perceptions were extremely highly correlated with audience perceptions ($r = .99$, $p < .001$).

Seven of the stimulus programs embodied redundant combinations--those the researchers described as redundant, matching, related, or equivalent. Audience perceptions of these programs were consistent with the researchers' perceptions. These programs included the combinations that Hartman (1961b) and Severin (1967) distinguished as being completely redundant or merely related, but that Conway (1968) considered "referentially equivalent." A comparison of mean audience responses on the match/mismatch scale for the four programs involved in this dispute showed that the audience did not distinguish differing degrees of relatedness [$F(4,436) = 2.03$, $p > .05$], thus supporting Conway's position.

Five programs embodied non-redundant audio/video combinations--those the researchers characterized as unrelated, contradictory, mismatched or nonredundant. Audience perceptions of these programs matched the perceptions of the researchers.

Three programs embodied researchers' attempts to create audio/video combinations that were neither completely redundant nor completely nonredundant. The researchers' names for these combinations reflect their ambiguous nature.

Warshaw's (1978) "incomplete redundancy" combination consisted of a picture of a dog in the video channel with an announcer saying "animal" in the audio channel. The audience did agree that the combination was more redundant than nonredundant. However, this program received the highest number of +2 ratings across all four scales (average frequency = 34.5), indicating the audi-

ence perceived the between-channel relationship to be less than completely redundant.

Severin's (1967) "unrelated, same category" combination consisted of a picture of a bison with the spoken word "moose." The audience did not agree that the channels were unrelated. It is likely that, although many of the subjects knew the picture on the screen was not that of a moose, many others did not. Those subjects may have assumed that the unfamiliar shaggy animal was indeed a moose because it was presented together with that audio label.

Grimes' (1989) "related/match-general" combination was represented in this study by video of a row of cars in good condition in a shopping plaza parking lot, while the announcer in the audio channel said, "Vandals did five hundred dollars' damage to a car parked at the shopping plaza." The audience did not agree that the audio and video were related. This program also received the highest number of +1 ratings (average frequency = 32) and the highest number of neutral ratings (average frequency = 20) across all four scales. The audience was very sensitive to the mixture of supporting and conflicting elements in this audio/video combination.

On the whole, the subjects' responses support the researchers' descriptions of the programs, finding redundancy and nonredundancy where the researchers said it would be, and diverging on programs that attempted to mix redundant and nonredundant elements.

Conclusion

In this study, audience members, television producers and redundancy researchers interpreted simple, straightforward combinations of audio and video

in fundamentally the same way. This consensus on audio/video relationships could provide the foundation for the development of more precise categories of between-channel redundancy. However, the programs and the instrument used in this study may be too simple to accommodate the complexity of a typical television message with all its variable relationships. Future research to define redundancy categories should employ the rich descriptions of qualitative methods, which more closely parallel the nature of television.

While audience interpretations in this study were quite similar to those of researchers, the more complex and ambiguous the audio/video relationships were, the more varied the interpretations became. Therefore, future studies of the effects of different audio/video combinations should continue to measure rather than assume audience interpretations of the messages. Reports of these studies should describe the television messages used with great precision, consistency and detail.

References

- Conway, J. K. (1968). Information, presentation, information processing, and the sign vehicle. *AV Communication Review*, 16, 403-414.
- Drew, D. G. & Grimes, T. (1987). Audio-visual redundancy and TV news recall. *Communication Research*, 14, 452-461.
- Eco, U. (1982). Towards a semiotic inquiry into the television message. In J. Corner & J. Hawthorn (Eds.), *Communication Studies: An Introductory Reader* (pp. 131-149). London: Edward Arnold.
- Graber, D. A. (1989). Content and meaning: What's it all about? *American Behavioral Scientist*, 33, 144-152.
- Grimes, T. (1989). *The consequence of 'grabbing B-roll' in television news: Why semantic audio and video redundancy is crucial to recognition*. Paper presented to the Radio-Television Division of the Association for Education in Journalism and Mass Communication, Washington, D.C., August 1989.
- Hartman, R. R. (1961a). Recognition learning under multiple channel presentation and testing conditions. *AV Communication Review*, 9, 24-43.
- Hartman, F. R. (1961b). Single and multiple channel communication: A review of research and a proposed model. *AV Communication Review*, 9, 235-262.
- Levie, W. H. & Dickie, K. E. (1973). The analysis and application of media. In R. M. W. Travers (Ed.), *The second handbook of research on teaching* (pp. 858-882). Chicago: Rand McNally.
- Littlejohn, S. W. (1978). *Theories of human communication*. Columbus, OH: Charles E. Merrill.
- Osgood, C. E., Suci, G. J., & Tannenbaum, P. H. (1957). *The measurement of meaning*. Urbana, IL: University of Illinois Press.
- Pezdek, K. & Stevens, E. (1984). Children's memory for auditory and visual information on television. *Developmental Psychology*, 20, 212-218.
- Reese, S. D. (1984). Visual-verbal redundancy effects on television news learning. *Journal of Broadcasting*, 28, 79-87.
- Severin, W. (1967). The effectiveness of relevant pictures in multiple-channel communications. *AV Communication Review*, 15, 386-401.
- Warshaw, P. R. (1978). Application of selective attention theory to television advertising displays. *Journal of Applied Psychology*, 63, 366-372.

Acknowledgements

This project was funded in part by a grant from the Kent State University Research Council.

The author wishes to thank the following: Michelle McCoy, for her assistance in gathering data; Gary Hanson, for creating the computer data base and programming statistical calculations; and A. Bennett Whaley, for advice on statistical tests.